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Descriptors- *COMPENSATORY EDUCATION PROGRAMS, CONTROL GROUPS, *CULTURALLY DISADVANTAGED, LANGUAGE ABILITY, *LANGUAGE DEVELOPMENT, *LANGUAGE ENRICHMENT, *LANGUAGE PROGRAMS, LANGUAGE SKILLS, PRESCHOOL CHILDREN

Identifiers- *Head Start, ITPA, PPVT

A compensatory language program was administered to 13 children, considered, for the most part, as culturally disadvantaged and linguistically deficient. These 13 children comprised the experimental group, while 12 other children were used as a control group. The ages of the children ranged from 3 years, 3 months to 5 years, 10 months. The average age of the experimental group was less than that of the control group. The experimental group was divided into three groups on the basis of language ability. The language program required the children to describe things, listen to the language models of the teacher, and imitate those models. Pretests administered at the beginning of the 5-month program were (1) the Illinois Test of Psycholinguistic Abilities (ITPA), (2) the Peabody Picture Vocabulary Test (PPVT), and (3) the Irwin Articulation Test. Only the ITPA and PPVT were given as posttests. The scores of the experimental and control groups on the ITPA and PPVT did not differ significantly except on two subtests of the ITPA, both of which tested grammar skills. Thus, it was concluded that the language progra did produce some gain in the language ability of the experimental group. It was also found that the most able children at the beginning of the program benefited the most from the program. (WD)

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The University of Kansas Head Start Evaluation and Research Center

III.

"Effects of a Language Program on Children in a Head Start Nursery."

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The Effects of a Language Development Program on children in a Headstart Project

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ABSTRACT

The purpose of this project was to test the effects of a compensatory language development program on a group of Headstart children. Such a program was administered to thirteen children enrolled in Headstart classes at Fairview Elementary in Olathe, Kansas, a small community neighboring Kansas City. For five months, daily sessions of approximately twenty minutes in length were held with small groups of three to five children. These children, plus a similar group who were not receiving the special language program, were tested prior to and following the program. Although few differences were shown between gains of the experimental and the control groups in total language age scores, significant differences were found on two subtests of the ITPA: the Vocal Encoding and the Auditory-Vocal Automatic. Only a small difference was shown between gains made by the two groups on the Peabody Picture Vocabulary Test. The children within the groups varied widely on all tests given, emphasizing the need for an even more individualized program than was administered during this project.

INTRODUCTION

It has become a well-known fact that the majority of children among the culturally disadvantaged show deficiencies in language development when compared with middle-class children. Tests of language and speech skills indicate that the language deficiencies cover the gamut of encoding and decoding possibilities. "Many disadvantaged children come close to the total lack of ability to use language as a device for acquiring and processing information." (Bereiter and Engelmann, 42). Because the ability to use language as a means of acquiring and processing information is vital to the ultimate well-being of the individual, particularly in shcool when the acquiring of information is concentrated, lack of this ability is of much concern to those attempting to find means of uplift for the lower socio-economic levels of our society. It would seem that this ability to use language is vital to the success of the child in school and would thus be a basic factor in determining how long he remains in school.

Granting the need to compensate for restricted opportunities for language learning, the methods of successful compensation must be determined. Increased socialization, as is available in many nursery schools, does not seem adequate to this purpose (Eaton, 1967). One method of compensation which has been attempted is teaching certain language skills directly in language development sessions incorporated within preschool programs. This teaching is done by the regular preschool teacher or by a language specialist who works with small groups of hhildren at a time. One advantage of a language specialist would be that the children could be grouped according to their ability and be taught more according to individual needs. The purpose of this project was to test the effects of such a compensatory language development program on a group of Headstart youngsters.

PROCEDURES

Description of the Children

The children in the experimental group included seven girls and six boys, ranging in age from three years, three months to five years, ten months. The mean CA for this group was four years, four months at the beginning of the program, with a standard deviation of 8.6 months. Three of the boys and two of the girls were Negro; the rest were white. In the control group, there were seven girls and five boys, whose ages ranged from three years, seven months to five years, six months The mean age for this group was four years, seven months, with a standard deviation of 7.1 months. One of the girls and two of the boys in this group were Negro.

All the children attended either the morning or afternoon session of the Headstart program at Fairview Elementary School in Olathe, Kansas. Ninety per cent of these children had been labeled "culturally disadvantaged" according to the financial requirements set down by the Office of Economic Opportunity. Ten per cent of the total program consisted of children from the community who were not necessarily culturally disadvantaged but indicated they could benefit from the Headstart program. For example, three of the children have parents who are deaf. Exposure to a more normal speech environment seemed desirable for them.

Selection of the children for the experimental and the control groups was made from a list of names. Except for attention to equalizing the groups according to sex and race, selection was random. The children were drawn from four different classes: the experimental group from two differ-

ent morning classes, and the control group from both morning and afternoon classes. It was thought that drawing the children from several classes would decrease the effects a specific classroom teacher might exert on a group of children and would thus tend to equalize the two groups.

The children were divided into three groups of four and five children each. The makeup of the groups was based on several factors: chronological age, ITPA Total Language Age, performance on the Vocal Encoding Subtest of the ITPA, and verbal expressive ability demonstrated on the recorded language samples taken at the beginning of the treatment period. Group I was made up of those children demonstrating least amount of skill with language. These tended to be the youngest children, although this was not completely true. Of the four children in this group, three were boys and one was a girl. Two of the boys were Negro. These children scored ITPA Total Language Ages at least one year, and generally more than one year, below what would be expected for their CA's. Their Vocal Encoding scores tended to be even more depressed in relation to their CA's. One boy is the child of deaf parents and has a brother and a sister, both deaf.

Group II consisted of two boys and two girls, who demonstrated a higher degree of verbal ability on the tests. All the children were older chronologically, and demonstrated language skills definitely more advanced, than those in Group I. However, on most of the tests they fell a few months to over a year below the norms for their ages. One girl originally in this group proved so upsetting to the rest by her behavior that she was removed from the group and was seen individually or with one other child for most of the remaining months. Occasionally, she was placed back in a group but never proved able to be placed in this situation consistently.

Group III was composed of five children who demonstrated the greatest amount of speech and language skill. These children proved to be, in general, the best behaved, the most attentive, and the most verbal. In contrast to those in the other groups, their test scores fell close to the norms for their ages and often rose above the norms.

Speech and Language Goals

Rather general goals were set up for this language program. These goals were established after the speech clinician had carefully examined the tests individually and had gained some experience working with the children. However, the general goals were based upon, not only the test scores of the children in this program, but on a wide variety of literature which attempts to discover the effects of cultural deprivation upon language and reports findings of attempts at remediation.

The general goals, on which the daily lessons were based, were the following:

1. Increased ability to sit and attend while a story is read or told to the children.

2. Ability to name members of categories, for example, animals, professions, colors, articles of clothing, and so forth.

3. Ability to make a first and second order statement (Bereiter and Englemann) about each category member, for example, "This is an animal. This animal is a horse. This horse is black."

4. Ability to follow logical sequence of events:

a. to solve picture problems by wording through evidence in the picture
b. to retell a familiar story in its proper sequence

5. Ability to use certain adjectives to describe objects, for example,

hard - soft	round - straight
rough - smooth	big - little
heavy - light	colors

Of course, the ability of the individual children determined to a large extent what benefits they were able to receive from the language program. The wide range of language abilities among the children in the experimental group necessitated formulation of individual goals for each child. It was hoped that grouping on the basis of ability could help meet each child's individual needs. Some children who demonstrated needs which could not be adequately met in a group were worked with individually as often as time permitted.

Testing Procedures

Test Administration

Tests were administered prior to and following completion of the language development program. Testing was done by four research assistants trained in administering the tests. All were employees of the Head-start Research and Evaluation Center at the University of Kansas and all had had a good deal of experience testing this type of child.

The various tests were administered to the children individually in small rooms within the school building. Testing of each child was done in three separate periods during the pretesting and in two periods during the post-testing. The same tester administered the same tests to each child during the pre- and post-test periods, to eliminate any tester bias which might occur. The children were told they were to "play a game" with the examiner and most were willing to do so.

Testing Materials Used

Three tests were administered at the beginning of the language program and two tests were given six months later at the completion. The third test was not administered during the post-testing because of the loss of the research assistant qualified to record the responses.

As a measure of over-all language ability, the Illinois Test of Psycholinguistic Abilities was chosen. This test consists of nine subtests, each measuring a different aspect of language adeptness. The ITPA tests skills in not only the auditory and vocal modalities but the visual and motor areas, too. Language age and standard score norms are available for each subtest as well as for the test as a whole.

To test the receptive vocabularies of the children (those words a child understands when he hears them), the Peabody Picture Vocabulary Test was used. The child was required to point to a picture out of a choice of four as the examiner said, "Show me_____".

A third test, given only at the beginning of the program, was the Irwin Articulation Test. This test, in a stage of development, tested the child's ability to produce the sounds of the English language. The words used to elicit each sound were presented through four means: black and white drawings, colored slides, colored drawings and three dimensional objects. The child's ability to correctly label the object was measured as well as his articulation skill.

Observation of the Children

For six weeks the language development sessions were observed three days a week by a research assistant from the Headstart Research and Evaluation Center at the University of Kansas. Various aspects of each child's listening or speaking behavior were recorded. From these recordings it was possible to make graphs charting any behavior change indicating possible trends. Also, a record of language used during the sessions by certain children was kept and this language was later broken down using as a model, Laura L. Lee's Developmental Sentence Types.

RESULTS

ITPA

Pretest

On this test, the experimental group scored a mean total raw score of 68.3, with a standard deviation of 29.4, and a total range of 95 points. In the control group, the mean total raw score was 75.4, with a standard deviation of 22.8 and a range of 91 points. The mean total scores convert to language ages of 3-8 for the experimental group and 3-10 for the controls. These ages are eight and nine months below their mean CA's when pretesting was done.

Post-test

Following completion of the language program, the experimental group scored a mean total raw score of 89.2, which is 20.9 points above the pretest score. The standard deviation was 30.8 and the range was 105 points. The control group scored a mean total of 89.2, the same as the experimental group but only 13.8 points above the control group's pretest mean. The standard deviation for this group was 23.7 with a range of 79 points.

Both groups' mean total raw scores convert to language ages of 4-3. This constitutes a five-month gain for the experimental group and a three-month gain for the controls. While the experimental group was one nomth closer to a language age coinciding with its mean chronological age, the controls were even more behind (ten months) than they were at the pretesting.

t tests were run to determine any statistically significant differences between the following means:

Pre- and post- test of the experimental group
Pre- and post- tests of the control group
Experimental pretest vs. post-test mean and the control pretest vs. post-test means.

None of these *t* tests showed a significant difference between means at the .05 level.

The individual means of the subtests were also compared. For each of the nine subtests, the pretest for the experimental group was subtracted from the post-test for that group to determine the amount of gain made between pre- and post- tests. The same procedure was followed for the control group. The mean difference of the experimental group was then compared to that of the control group on each subtest. On two subtests, the mean differences between groups were statistically significant at the .05 level. These subtests were Auditory-Vocal Automatic and Vocal Encoding, on which the amount of gain was 1 year, 1 month and 11 months more, respectively, in the experimental group than in the control group. The *t* for difference between groups on the Auditory-Vocal Automatic subtest was 2.16, with 2.07

needed for significance. The t for the Vocal Encoding difference between groups was 2.44, with 2.07 needed for significance.

On all other subtests exeept Visual Motor Sequencing and Visual Motor Association, the difference in gain between the experimental group and the control group favors the experimental group but fails to reach statistical significance.

PPVT

Pretest

The experimental group scored a raw score mean of 35.8, with 13.9 standard deviation and a 42-point range. This raw score converts (Table 2, Expanded Manual) to a receptive vocabulary age of 3-6, ten months below the mean CA of this group. The control group scored a raw score mean of 31.5, which converts to a vocabulary age of 3-3, one year, four months below their mean CA. This group was more homogeneous, with a standard deviation of 10.2 and a range of 27.

Post-test

Both groups scored 4.8 points above the pretest mean scores. In converting these scores to receptive vocabulary ages, however, the experimental group again increased five months (3-11 vocabulary age) while the control group gained only three months (3-6 vocabulary age).

No t test was considered necessary for this test because the difference between pre- and post-test means were identical for both groups.

Irwin test

Because no post-testing could be done with this test and no normative data is available for comparative purposes, only the results of the pretesting may be reported. Little interpretation of these results is possible.

The Irwin test consists of 112 items. Out of these, the experimental group had a mean score of 33.3 articulation errors and 33.0 word recognition errors. The control group had a mean of 24.3 articulation errors and 28.3 word recognition errors.

As explanation when comparing the two groups, particularly with regard to articulation errors, the difference in mean CA's of the two groups and the wider CA range in the experimental than the control group could be influential factors. The youngest child in the experimental group was only 3 years, 3 months while the youngest in the control group was 3 years, 7 months. At an age when articulation is maturing very rapidly in most children, a difference of four months can mean a substantial increase in articulatory skill.

The word recognition scores followed the same trend as the articulation scores, with the older, control group making fewer errors than the younger, experimental group. These scores are somewhat surprising, however, when one compares them to those on the PPVT, on which the experimentals did better on both the pre- and post-testing.

Discussion of the Test Results

In interpreting the results of the ITPA and the PPVT, one must keep several facts in mind concerning the children.

1) The control group was slightly older than the experimental group.
2) The ranges and standard deviations on all the tests were extremely

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high. This indicates a great deal of variability among the children before the program began and this variability continued throughout.

3) The difference in the N's is due to the children's irregularity of attendance. Although both groups started with fourteen children each and contained equal numbers of boys and girls, children either moved away or were absent from school so long post-testing became impossible.

4) This poor attendance which affected the testing was prevalent throughout the period of the langrage program. During a period of twenty-two days near the beginning of the program, four children were absent nine or more days, or over 40% of the time. Five more were absent three or more days, or almost 14% of the time. Poor attendance is due to a number of causes and can, of course, be expected to occur more in dealing with young children. Nevertheless, when attendance is irregular, the amount of learning possible by a child is lessened drastically. Not only is the child exposed to fewer learning experiences, but he must continually be re-adjusting to the social situation. It seems probable that the learning experiences he is exposed to would not be greatly effective while the social adjustment is incomplete.

In comparing each group's performance on the ITPA prior to and following the language program, the experimental group showed gains on all the subtests except the Visual-Motor Association test, on which the means were the same. This is not true for the control group, however, which showed losses on two subtests and remained the same on two others. The biggest gains made by the experimental group were on the Auditory-Vocal Automatic test, the Vocal Encoding test, and the Auditory-Vocal Association test. The skills required on these subtests are used directly when employing a verbal language. They include the grammar, the descriptive vocabulary and word association which enables the speaker to accurately communicate his thoughts and the listener to accurately interpret what he hears, as well as gain some indication of the home environment and socio-ecomonic-status of the speaker.

It is not surprising that the greatest gains in the experimental group were made on these three subtests considering the nature of the language development program. Each child was challenged again and again to describe objects, pictures, people and actions. Each child heard good sentence structure and correct grammar from the teacher, was asked to listen for several fine points of grammar and was required to imitate many of the teacher's language models. All activities offered a wealth of vocabulary. It is interesting that on these three subtests and on most of the others, the post-test scores came much closer to what might be expected from culturally-advantaged youngsters of the same age than do the pretest scores. This seems to indicate that the language deficit is beginning to be overcome. Because the abount of gain on the same three subtests mentioned bbove was not nearly as great in the control group, it would be fairly safe to say the gains in the experimental group were largely due to the compensatory language program.

Behavior Characteristics of the Children

Not only was the range in chronological ages wide but so was the range in maturity of the children. At the beginning of the program some of the younger children had not yet learned to do various self helps, such as putting on or zipping their coats or blowing their own noses. Some were initially quite hesitant about leaving the rest of the children to go with the speech clinician. With some, fear of the strange situation seemed to be the problem. With others, unwillingness to leave the activity in which they were presently engaged posed the difficulty. This problem might not have occurred if the facilities for the testing and teaching had been different. As it was, in the first month lack of a private area made it necessary to use a small room in a building separate from the Headstart classes. In the cold weather the children had to put on their coats to walk between buildings. For some this was welcomed; for others, however, it only emphasized the fact they were being drawn away from the rest of the group. One child was particularly reluctant most of the time. Instead of forcing her to go or even asking her day after day and letting her refuse, time was spent with her alone for a few minutes each morning, letting her see that what was done could be desirable and fun, and yet preventing her from completely controlling the situation.

The children's behavior posed difficulties for several weeks. They became easily distracted from the lesson and would move from their seats, fight among each other or run to investigate drawers or other interesting parts of the room. For the first several weeks they would seldom attend to a lesson for more than ten minutes at a time. One of the boys in the experimental group was of age to be attending kindergarten but had been kept out because of his uncontrolled behavior. The teacher's admonishments had little effect on disruptive behavior, which was usually begun by one child and then spread throughout the group. Various rewards and punishments were tried. During certain activities plastic colored chips were given for correct responses. The chips, which could be chained together, were rewarding to most of the children if used infrequently, but lost appeal if used every day. The children enjoyed holding the cards used in the activities but would often fight over them and some were simply disinterested in holding them at all. The only punishment found effective was taking them to talk with the principal, who was a man. However, as a method to control behavior the punishment was too far removed from the behavior punished and proved unsatisfactory.

Finally, a reward system was devised which did prove effective. The children were told that for each day they sat in their seats for the entire period of the language session and paid attention to the teacher, they would get a "happy face" drawn on a chart after their names. After accumulating a certain number of these happy faces, they would receive a "prize" (a dime-store toy) which would be theirs to take home and keep. The children responded immediately. Some of the more immature had difficulty understanding that they would not receive a prize each time they earned a happy face and the teacher had to continually re-explain the system. Probably a more immediate reward would have been better with these young children.

By the end of the program, the children's behavior had changed considerably. Average length of the sessions was twenty minutes and some sessions could have easily run longer. The children remained in their seats for the most part and attended well to the activities. The one child who was seen

individually was never successfully integrated into a group although she did work well with one other child, usually. Charts of certain children's listening attention span are included at the end of this section. This behavior was recorded during the last month of the program by an observer who observed each child for an average of six minutes per session and recorded whether he was attending or not each five seconds of that period. The percentage of time the child attended during that period was then computed. Although this percentage varied considerably for every child, it tended to hover around 85%, and varied from 35% to 100%.

The children in the experimental group who seemed to benefit most by the language program were those who scored fairly high on the pretests. One child gained one year, five months on the ITPA, going from an LA of 3-7 to 5-0 in a five month period. Another gained two years, one month, going from an LA of 3-7 to 5-8. It is logical, of course, that children who have achieved the most will continue doing so, being able to grasp concepts quicker and retain information longer than other children. Also, having a firmer basis to build on, these children naturally derive more from what is presented them.. The varience in gains made in the program must be taken as evidence that, in order to reach all the children, and particularly those who most desperately need help catching up, more individualized approaches must be utilized in the classroom. The effort needed to teach some in the Headstart classroom a series of verbs, for instance, must be doubled or tripled for other children who need a great deal more repetition to learn a lesson. The need to break down the class into homogeneous groups in presentlng a language program would, of course, require a great deal of the teacher's time if a special language teacher was not available. The aides could be of enormous assistance in implementing a program of this kind, carrying on activities within the classroom while a certain small group was taken by the teacher for more specialized instruction. It seems vital that this type of teaching be done in the Headstart classroom, if the classes are to remain as hetergeneous as they normally have been.

SUMMARY AND CONCLUSIONS

A language development program was given to thirteen youngsters enrolled in Headstart classrooms at Fairview Elementary in Olathe, Kansas. For five months, daily sessions of approximately twenty minutes in length were held with small groups of three to five children. These children, plus a similar group who were not receiving the special language program were tested prior to and following the program. These scores were analyzed to determine whether the children valued from the language program and if so, in what special areas were particular gains made.

Very little difference was shown between the gains of the experimental and the control groups in total language age scores. Significant differences were found, however, on two subtests of the ITPA: the Vocal Encoding and the Auditory-Vocal Automatic. These subtests, which test grammar skills as well as ability to use adjectives in describing objects, show skills obviously gained in the language program.

Only a small difference was shown between gains made by the two groups on the Peabody Picture Vocabulary Test. This is surprising considering a great deal of emphasis was given to vocabulary in the program.

Because the Irwin Articulation Test was given only once, at the beginning, no comparisons may be made as to speech skills acquired during the program.

The children showed wide varience on all the tests given. This indicates the need for an even more individualized program than was administered, to reach the slowest learners as well as those who learn rather quickly. One program administered to a group this varied could not possibly benefit more than a fraction of the group.

Materials Used in the Lessons

Peabody Language Development Kit. Level #1. Published by American Guidance Service, 720 Washington Ave. S.E., Minneapolis, Minn. 55414. About $50.

Toys used:

- Miniature farm animals
- Balls of various colors and shapes
- A felt board on a metal stand
- Glass marbles
- Old Maid cards

Books

Bond, Gladys B. The Magic Friend-Maker, Racine, Wis.: Whitman Publishing Co., 1966. $.69.
_____ Patrick will Grow, Racine, Wis.: Whitman Publishing Co., 1966. $.69.

Bradfield, Joan and Roger. Who are You?, Racine, Wis.: Whitman Publishing Co., 1966. $.69.

Brightman, Homer. Mary Poppins, Racine: Whitman Publ. Co., 1964. $.19.

Crawford, Mel. The Turtle Book, New York: Golden Press, 1965. $.29.

Davis, Daphne. The Baby Animal Book, N.Y.: Golden Press, 1964. $.29.

Dugan, William. The Truck and Bus Book, N.Y.: Golden Press, 1966. $.29.

Funk, Melissa D. Pals, Racine: Whitman Publ. Co., 1966.

Grant, Cambell. Cinderella, N.Y.: Golden Press, 1950. $.29.

Hogstrom, Daphne. Little Boy Blue, Racine: Whitman Publ. Co., 1966

Kaufman, Joe. The Toy Book, N.Y.: Golden Press, 1965.

Keats, Ezra Jack. The Snowy Day, N.Y.: The Viking Press, 1964.

Knoche, Norma R. and Jones, Mary V. What Do Mothers Do?, Racine: Whitman Publ. Co., 1966. $.69.

Lewis, Shari and Reinach, Jacquelyn. The Headstart Book of -
Knowing and Naming
Looking and Listening
Thinking and Imagining
N.Y.: McGraw-Hill Book Co., 1966. $1.95 each.

Milne, A.A. Winnie-the-Pooh, N.Y.: Golden Press, 1965. $.29.

Nathan, Stella W. Chicken Little, Racine: Whitman Publ. Co., 1966. $.69.

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Peter Rabbit, Racine, Wis.: Whitman Publishing Co., 1963. $1.00.

Pfloog, Jan. The Tiger Book, N.Y.: Golden Press, 1965. $.29.

Pfloog, Jan. The Bear Book, N.Y.: Golden Press, 1965. $.29.

Schwalje, Marjory. A Pet at the Zoo, Racine: Whitman Publ. Co., 1965. $.29.

The Three Bears, Racine: Whitman Publ. Co., 1952. $.19.

Walt Disney Productions. Bambi, Racine: Whitman Publishing Co., 1966. $.29.

Watts, Mabel. Where is the Keeper? Racine: Whitman Publ. Co., 1961. $.59.

Wegner, Helmuth G. Snow White and the Seven Dwarfs, 1962. $.19.

Williams, Ben. The Three Little Pigs, Racine: Whitman Publ. Co., 1959. $.19.

Wright, Betty. Good Morning, Farm, Racine: Whitman Publ. Co., 1964. $1.00.

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Lee, Laura L. "Developmental Sentence Types: A Method for comparing Normal and Deviant Syntactic Development." Journal of Speech and Hearing Disorders, 4, 31, 1966, p. 311.

McCarthy, James J. and Kirk, Samuel A. Examiners Manual: Illinois Test of Psycholinguistic Abilities, Institute for Research on Exceptional Children, University of Illinois, Urbana, Illinois, 1961.

	Chronological Age			
	Pre-Mean	Post-Mean	Standard Deviation	Range
Experimental	4yrs. 4mo.	4yrs. 10mo.	8.9 mo.	2yrs. 7mo.
Control	4yrs. 7mo.	5yrs. 1mo.	7.1 mo.	1yr. 11mo.

Test	Raw Score Mean		Standard Deviation		Range		Language age Converted	
	Pre-	Post-	Pre-	Post-	Pre-	Post-	Pre-	Post-
ITPA Total								
Experimental	68.3	89.2	29.4	30.8	95	105	3-8	4-3
Control	75.4	89.2	22.8	23.7	91	79	3-10	4-3
PPVT								
Experimental	35.8	40.6	13.9	11.2	42	39	3-6	3-11
Control	31.5	36.3	10.2	13.7	27	22	3-3	3-6

Irwin	Artic. Errors			Word Rec. Errors		
	Mean	Standard Deviation	Range	Mean	Standard Deviation	Range
Experimental	33.3	18.8	57	33.0	31.3	71
Control	24.3	18.0	60	28.3	11.3	48

Table 1. -- Means, Standard deviations and ranges for comparison of the experimental group's and the control group's pre- and post-test scores.

	Experimental			Control		
	Pre L.A.	Post L.A.	Gains L.A.	Pre L.A.	Post L.A.	Gains L.A.
Auditory-Vocal Automatic*	3-6	4-7	1-1	4-3	4-3	0
Visual Decoding	3-8	4-5	0-9	4-1	4-9	0-8
Motor Encoding	3-6	3-10	0-4	3-6	3-2	0-4
Auditory-Vocal Association	3-6	4-5	0-11	3-8	4-5	0-9
Visual-Motor Sequencing	4-2	4-4	0-2	4-7	4-4	0-3
Vocal Encoding*	3-2	4-5	1-3	3-2	3-6	0-4
Auditory-Vocal Sequencing	4-2	4-7	0-5	4-2	4-2	0
Visual-Motor Association	4-0	4-0	0	3-8	5-1	1-5
Auditory Decoding	3-6	4-1	0-7	3-10	4-3	0-5

*Difference between gains of the experimental and the control group is significant at the .05 level.

Table 2. -- Pretest and post-test language age scores and the gains made by each group on each of the subtests of the ITPA.

K•E 10 X 10 TO THE INCH 46 0700
7 X 10 INCHES MADE IN U.S.A.
KEUFFEL & ESSER CO.

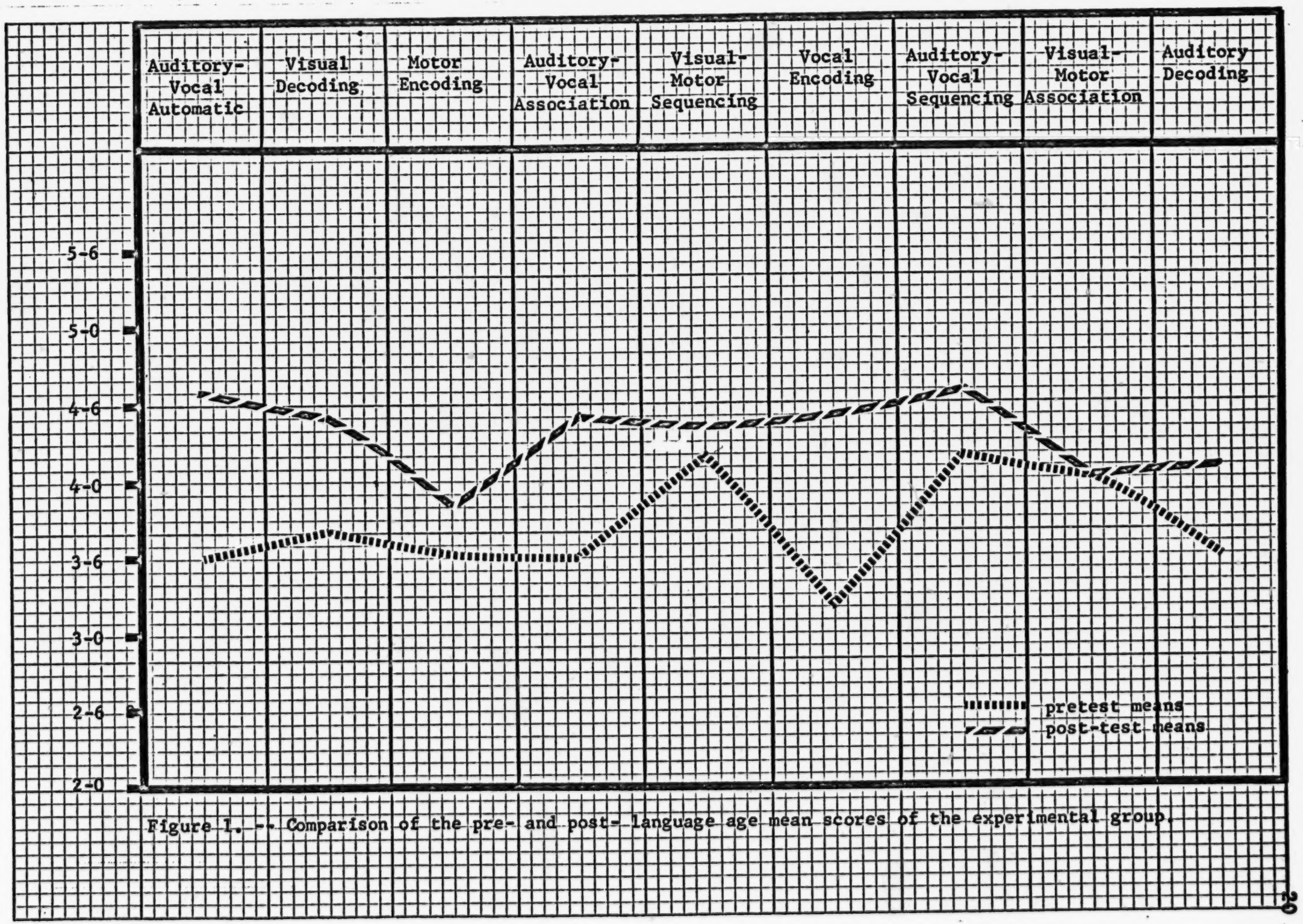


Figure 1. -- Comparison of the pre- and post- language age mean scores of the experimental group.

K&E 10 X 10 TO THE INCH 46 0700
7 X 10 INCHES MADE IN U.S.A.
KEUFFEL & ESSER CO.

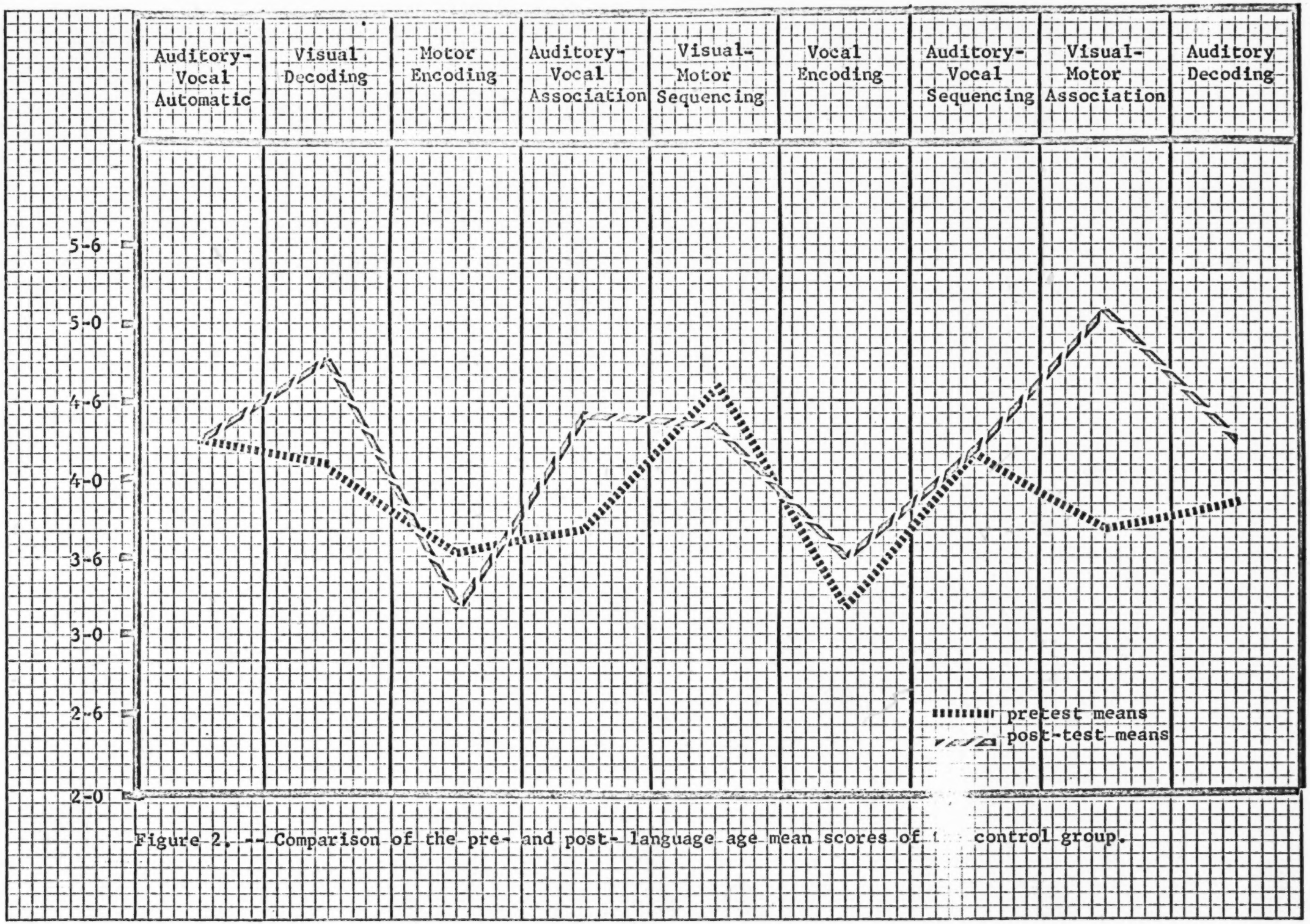


Figure 2. -- Comparison of the pre- and post- language age mean scores of t control group.

K·E 10 X 10 TO THE INCH 46 0700
7 X 10 INCHES MADE IN U.S.A.
KEUFFEL & ESSER CO.

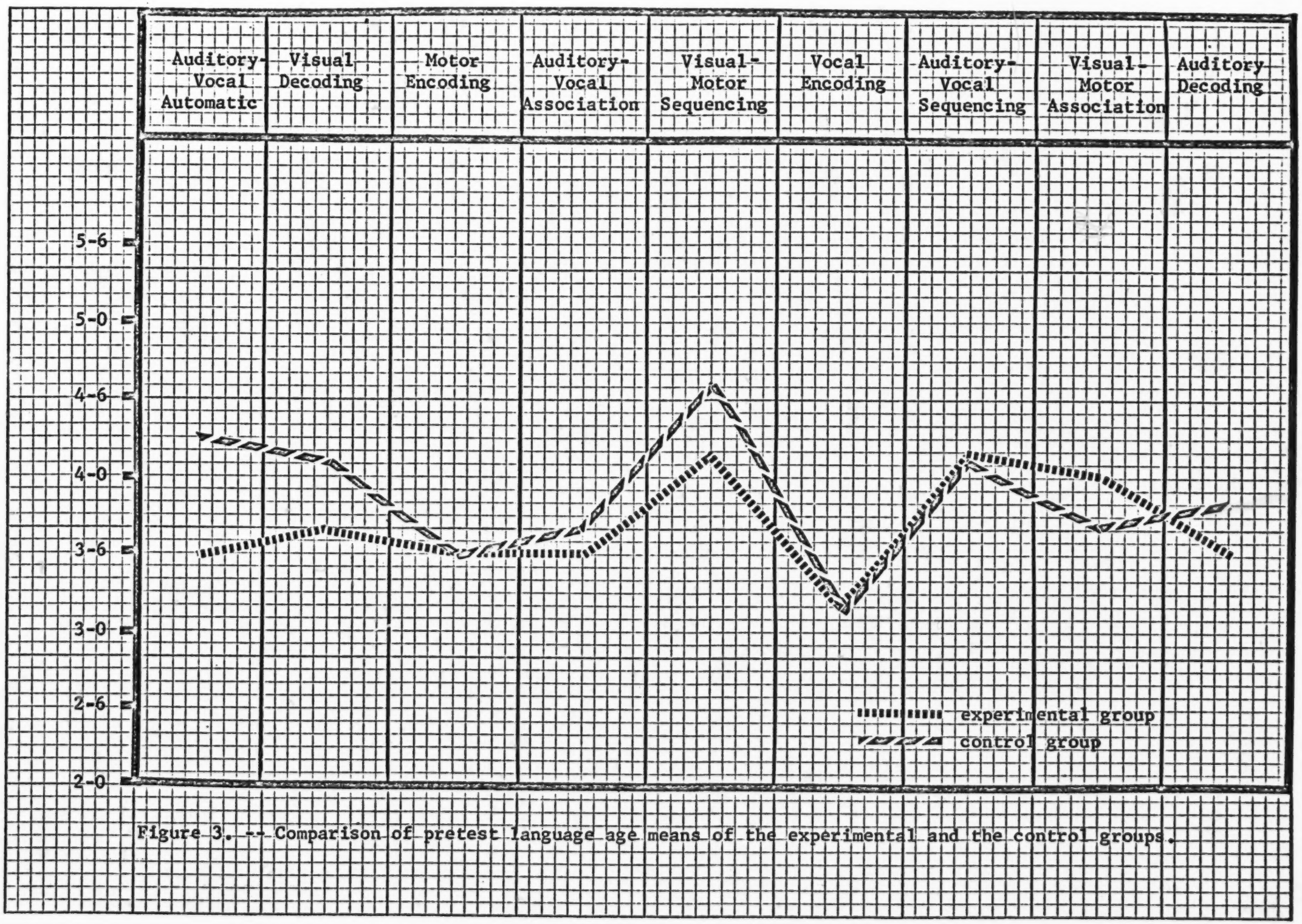


Figure 3. -- Comparison of pretest language age means of the experimental and the control groups.

K&E 10 X 10 TO THE INCH 46 0700
7 X 10 INCHES MADE IN U.S.A.
KEUFFEL & ESSER CO.

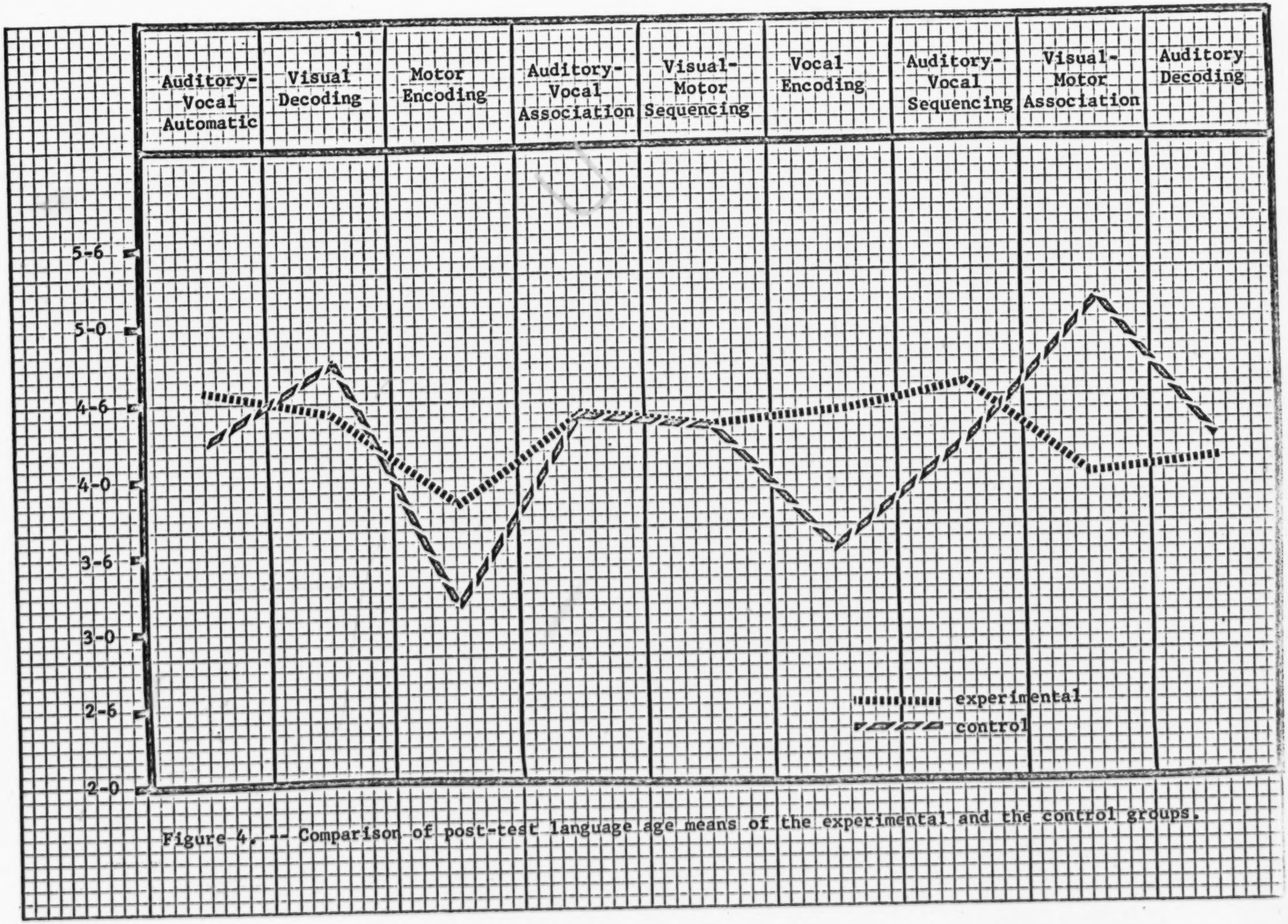


Figure 4. -- Comparison of post-test language age means of the experimental and the control groups.

K+E 10 X 10 TO THE INCH 46 0700
7 X 10 INCHES MADE IN U.S.A.
KEUFFEL & ESSER CO.

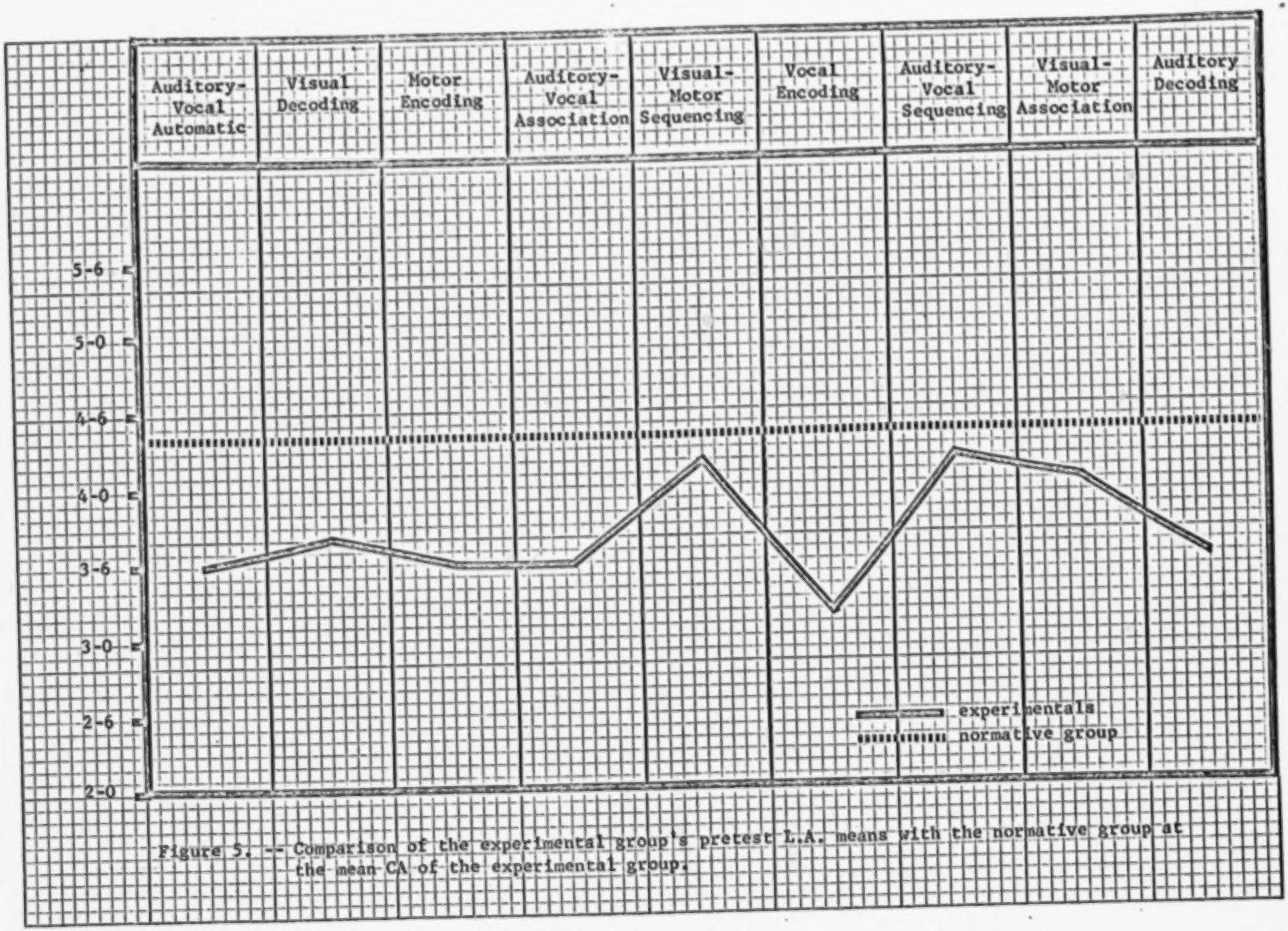


Figure 5. -- Comparison of the experimental group's pretest L.A. means with the normative group at the mean CA of the experimental group.

K&E 10 X 10 TO THE INCH 46 0700
7 X 10 INCHES MADE IN U.S.A.
KEUFFEL & ESSER CO.

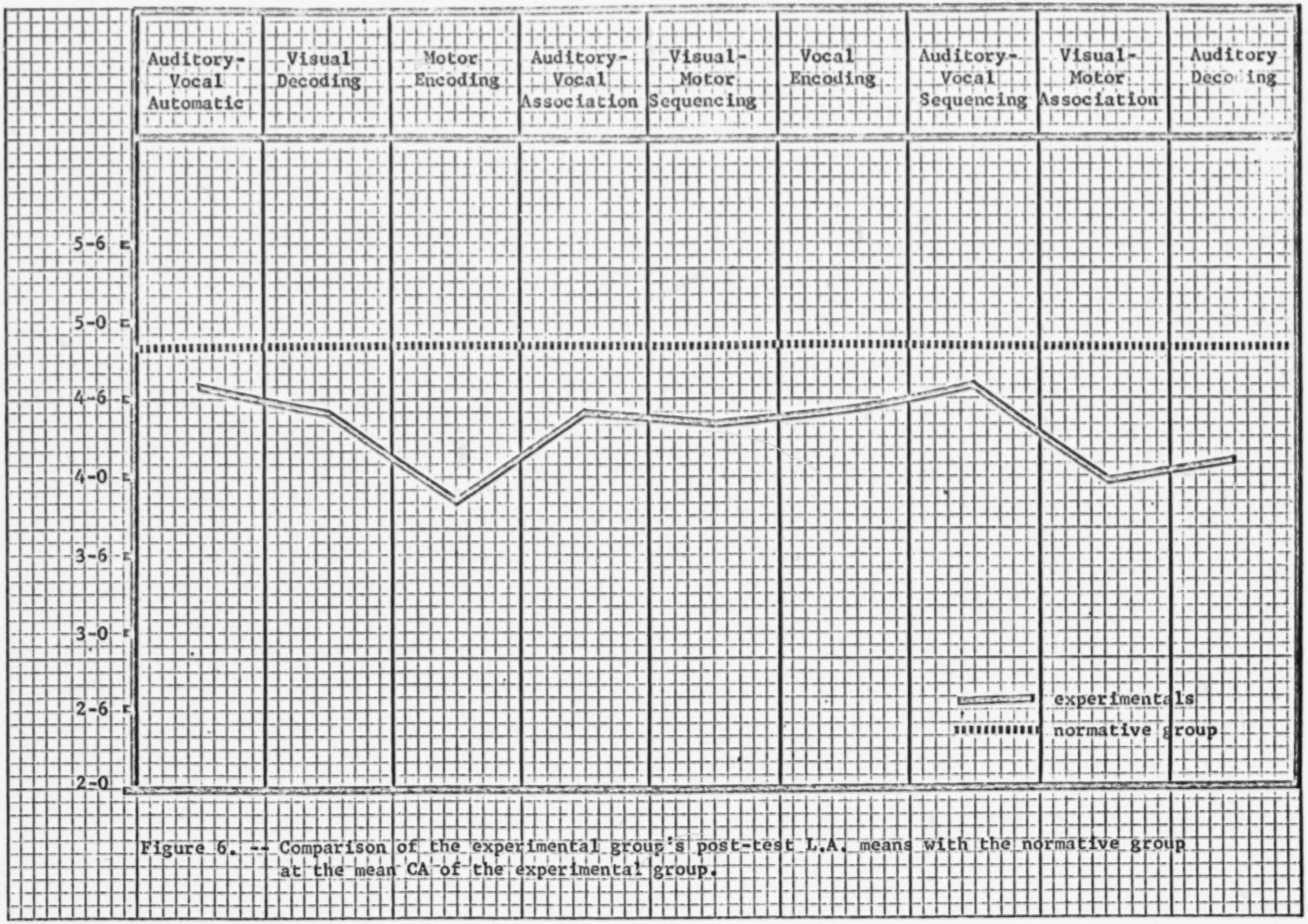


Figure 6. -- Comparison of the experimental group's post-test L.A. means with the normative group at the mean CA of the experimental group.

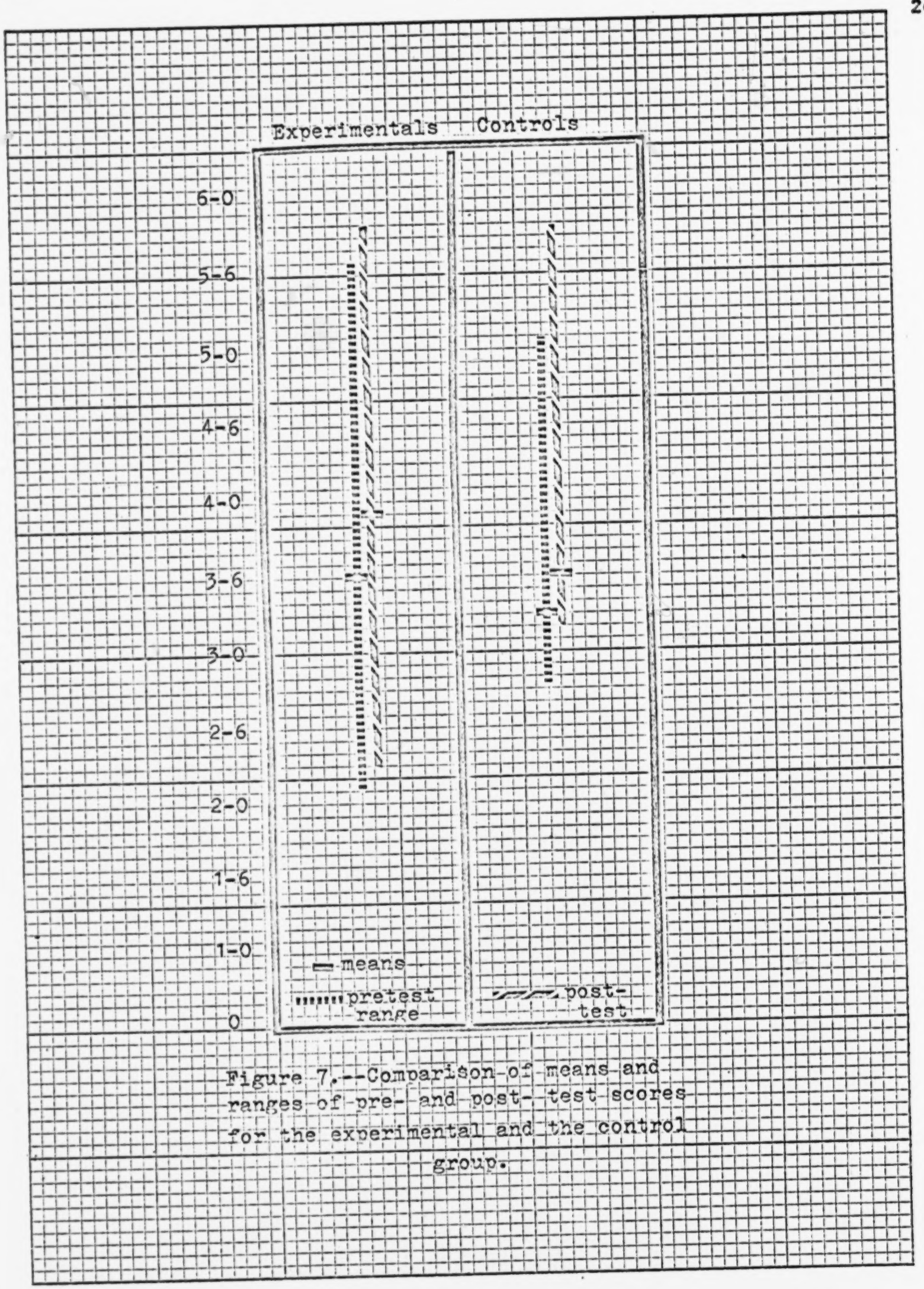
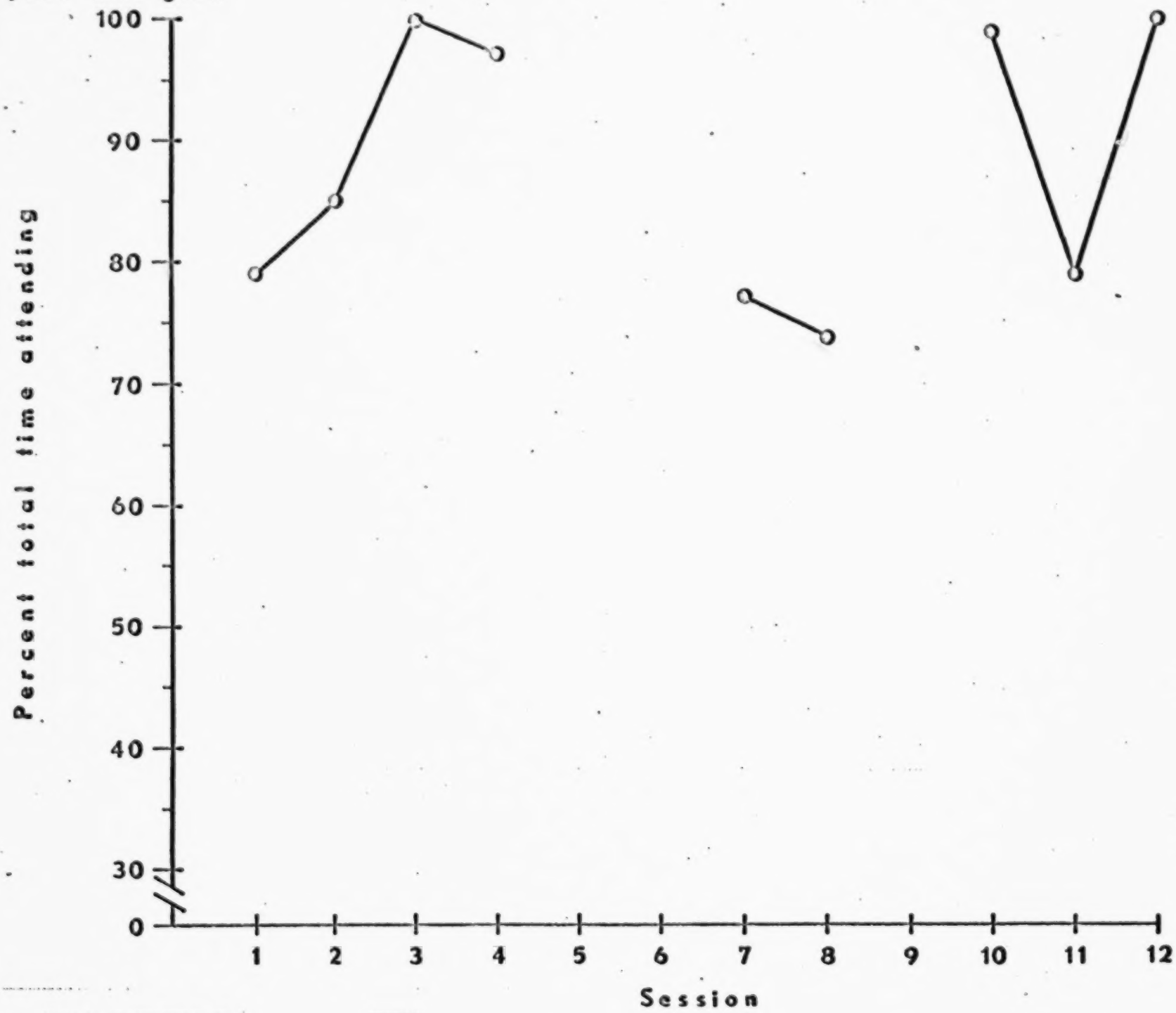


Figure 7.--Comparison of means and ranges of pre- and post- test scores for the experimental and the control group.

KE 10 X 10 TO THE INCH 46 0700
7 X 10 INCHES
KEUFFEL & ESSER CO.

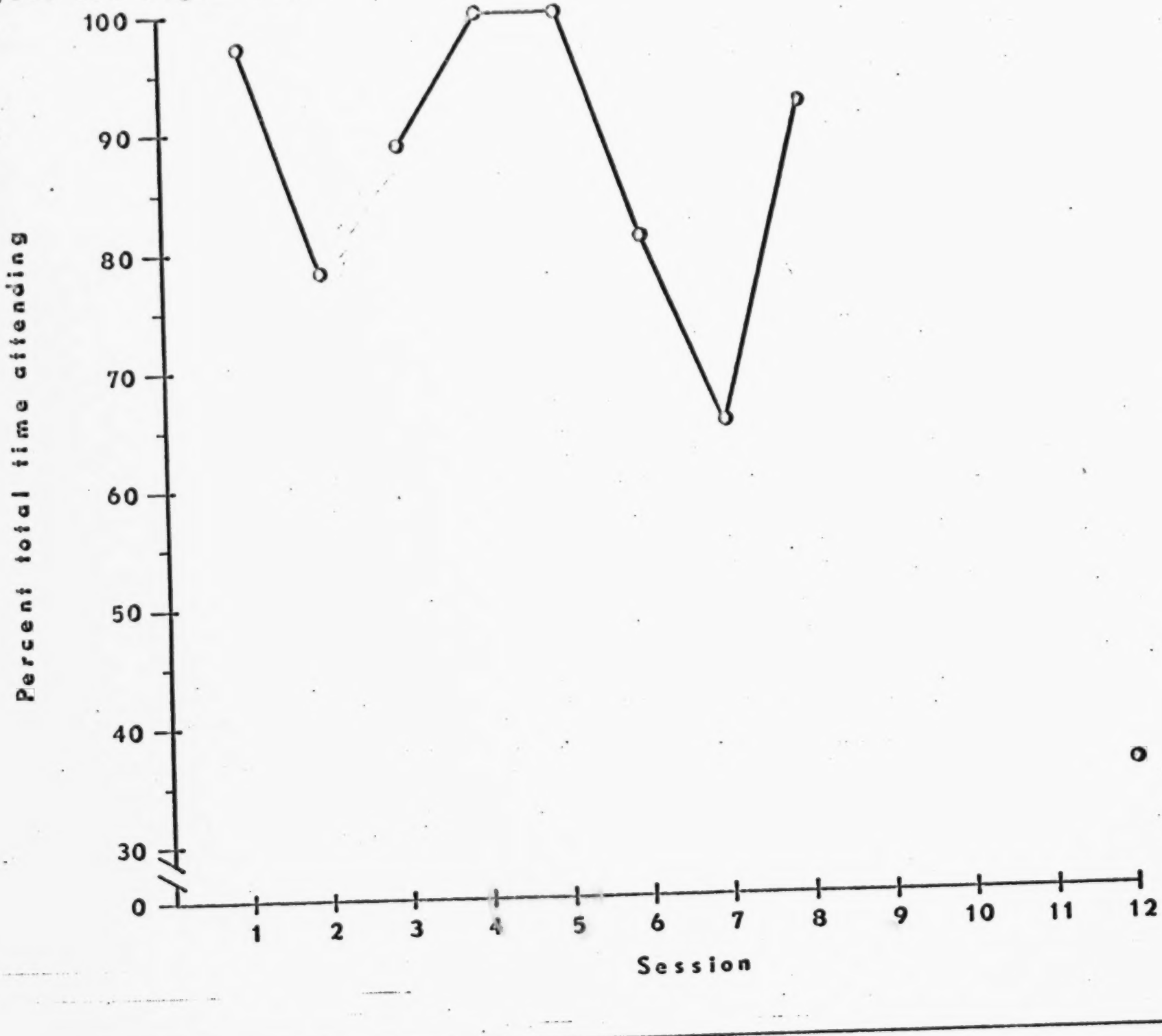
Percentage of each session during which child was attending to lesson:

4-year old girl



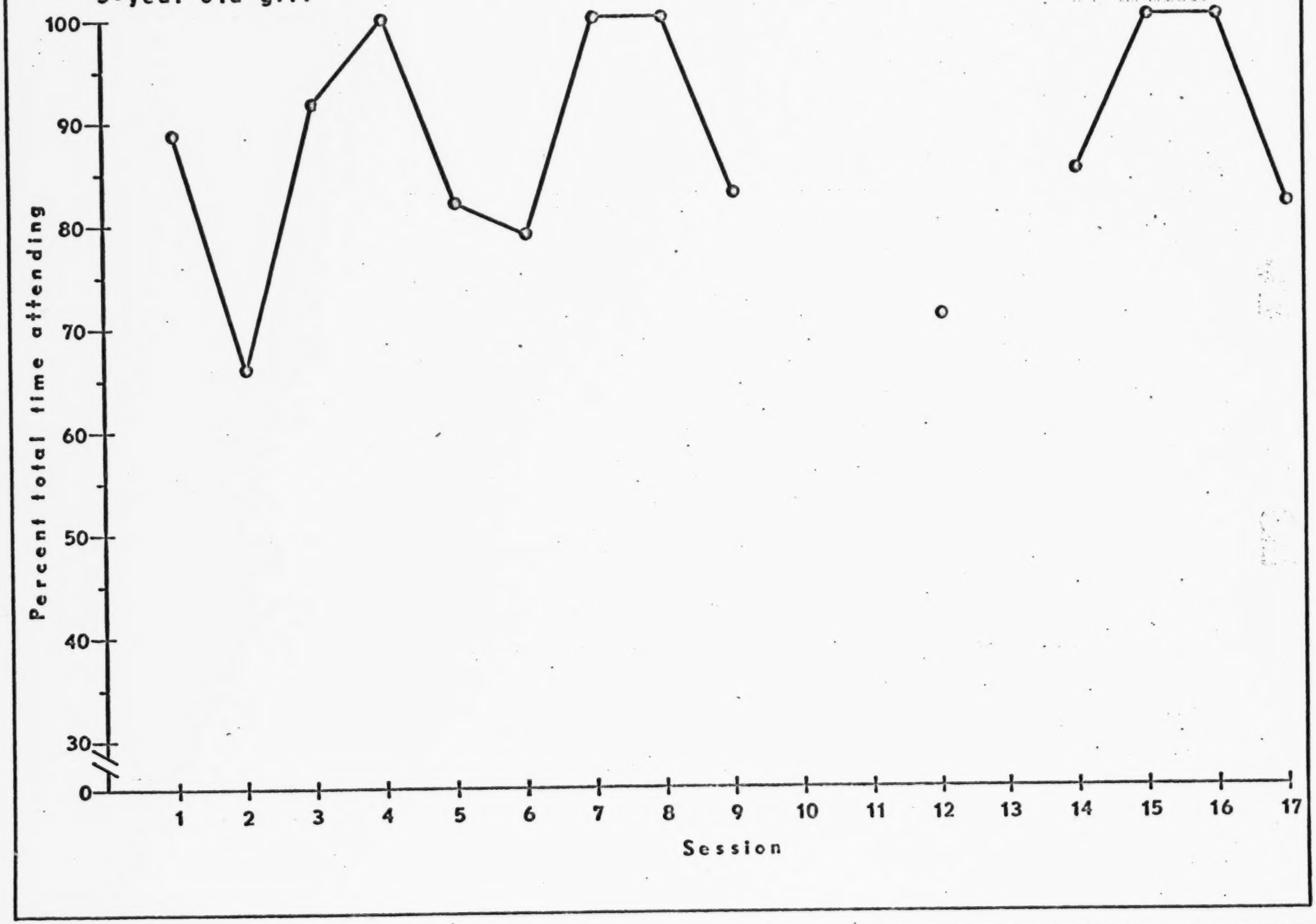
Percentage of each session during which child was attending to lesson:

4 year old negro boy



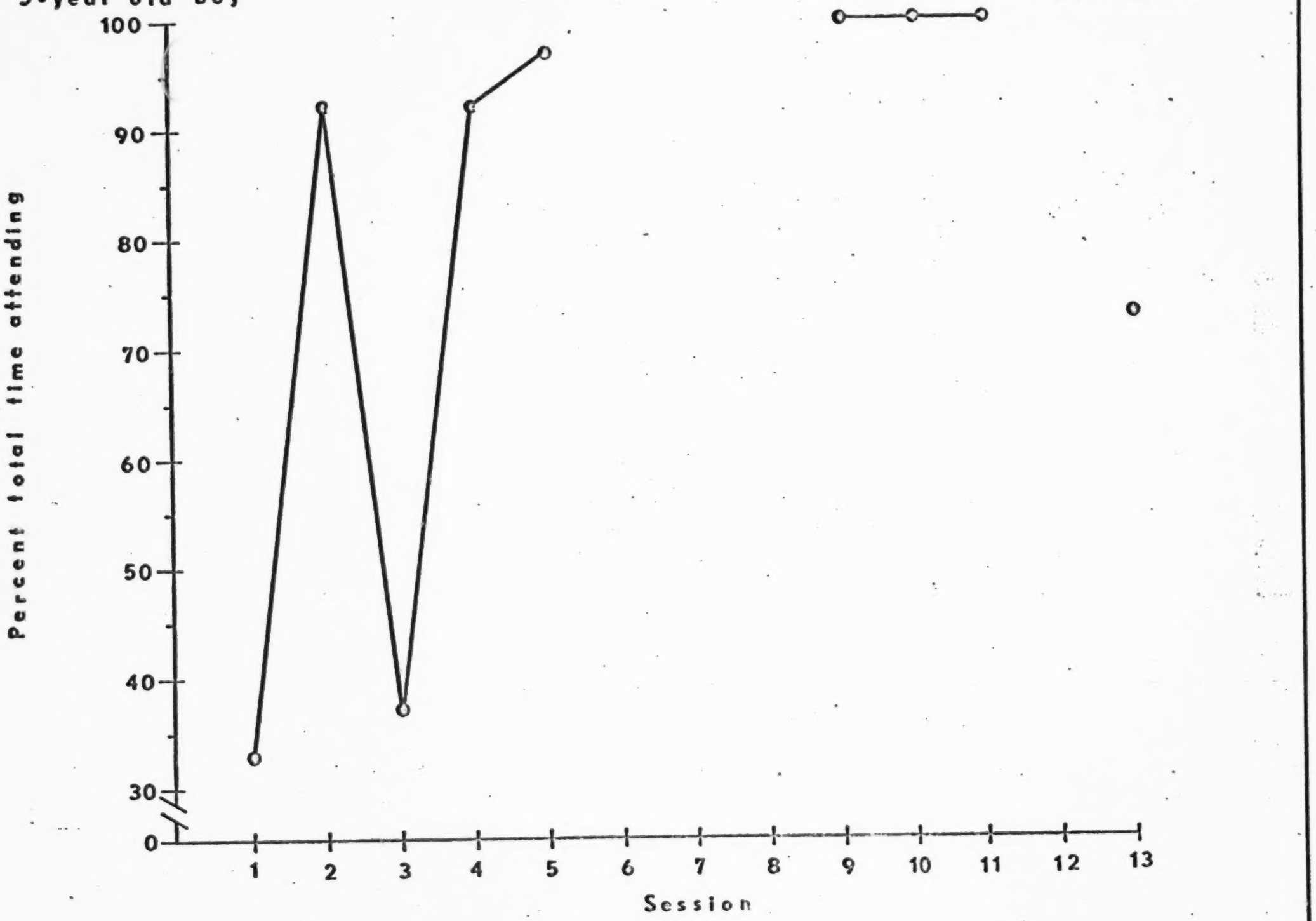
Percentage of each session during which child was attending to lesson:

5-year old girl

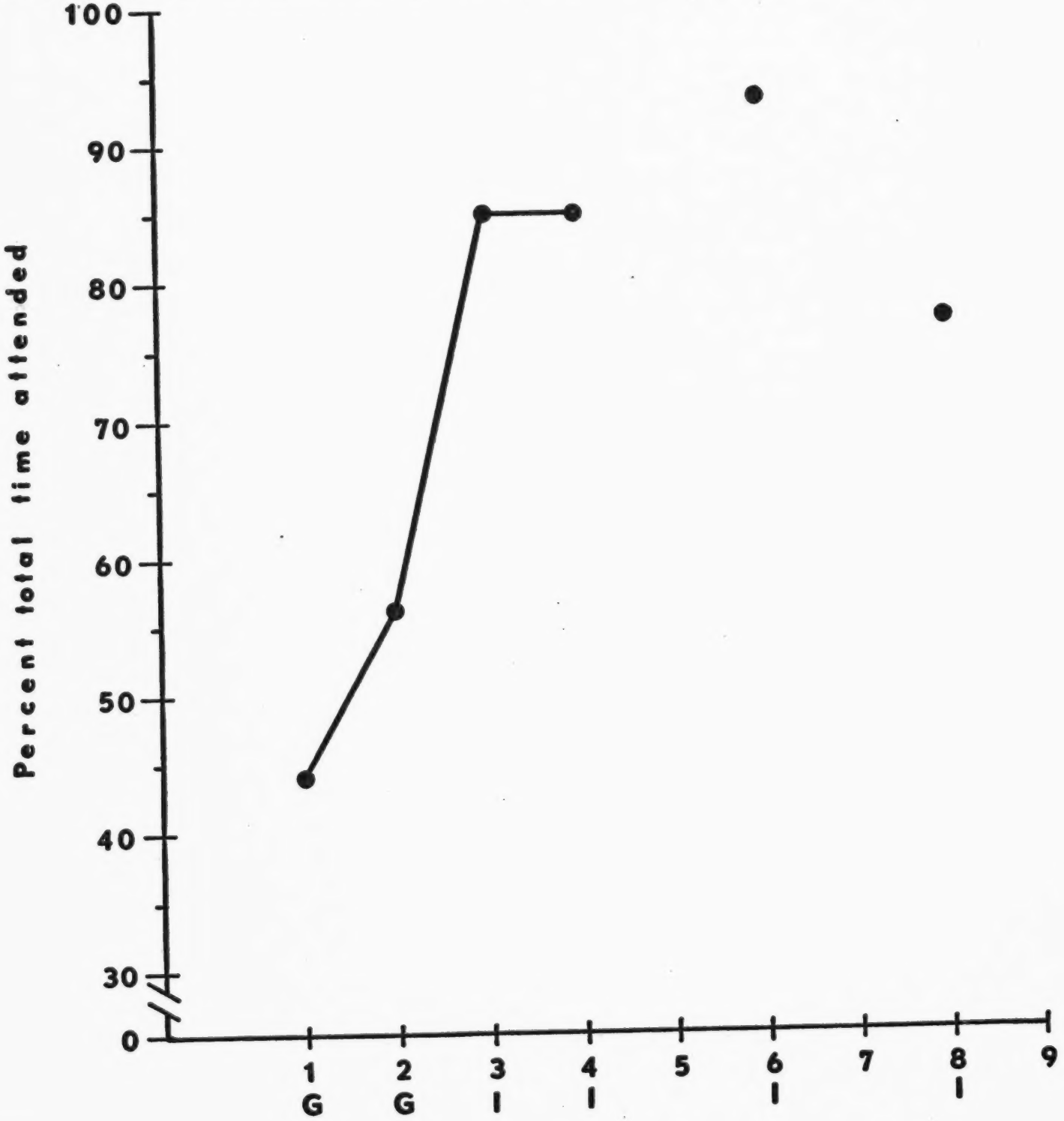


Percentage of each session during which child was attending to lesson:

5-year old boy



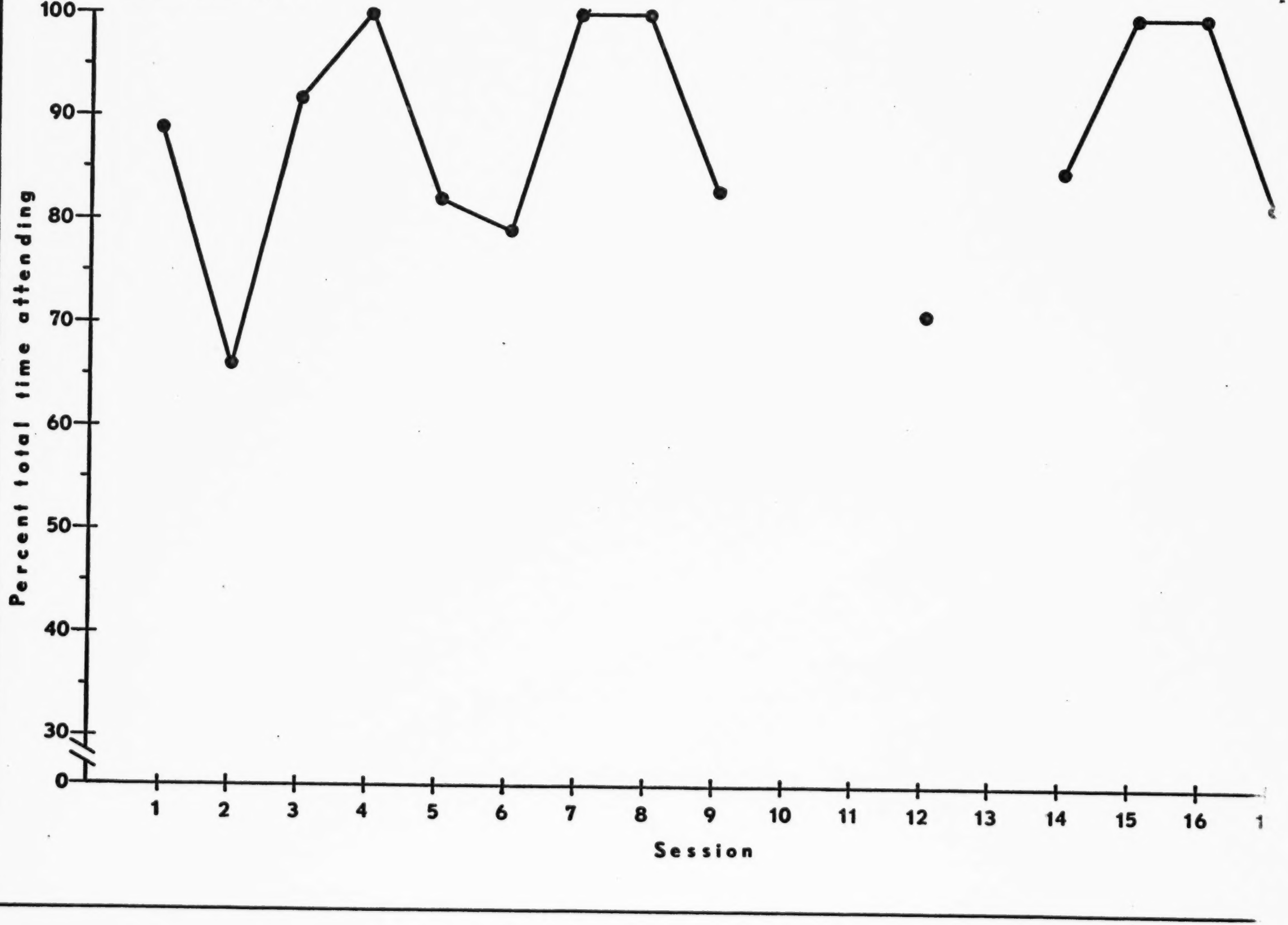
Percentage of each session during which child was attending to lessons:
5-year old girl with behavior problems



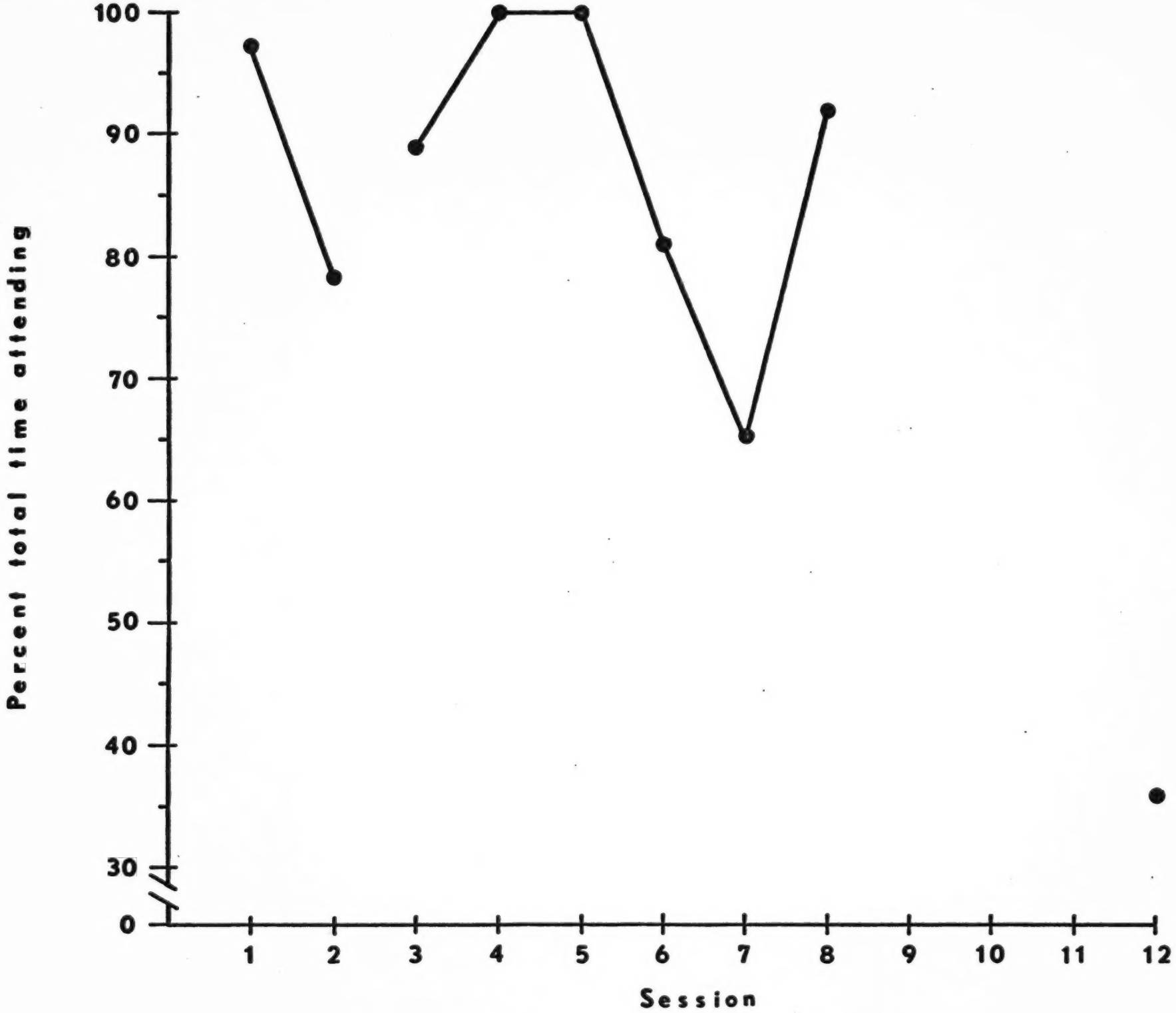
G: Group sessions

I: Individual sessions

Percentage of each session during which child was attending to lesson:
5-year old girl

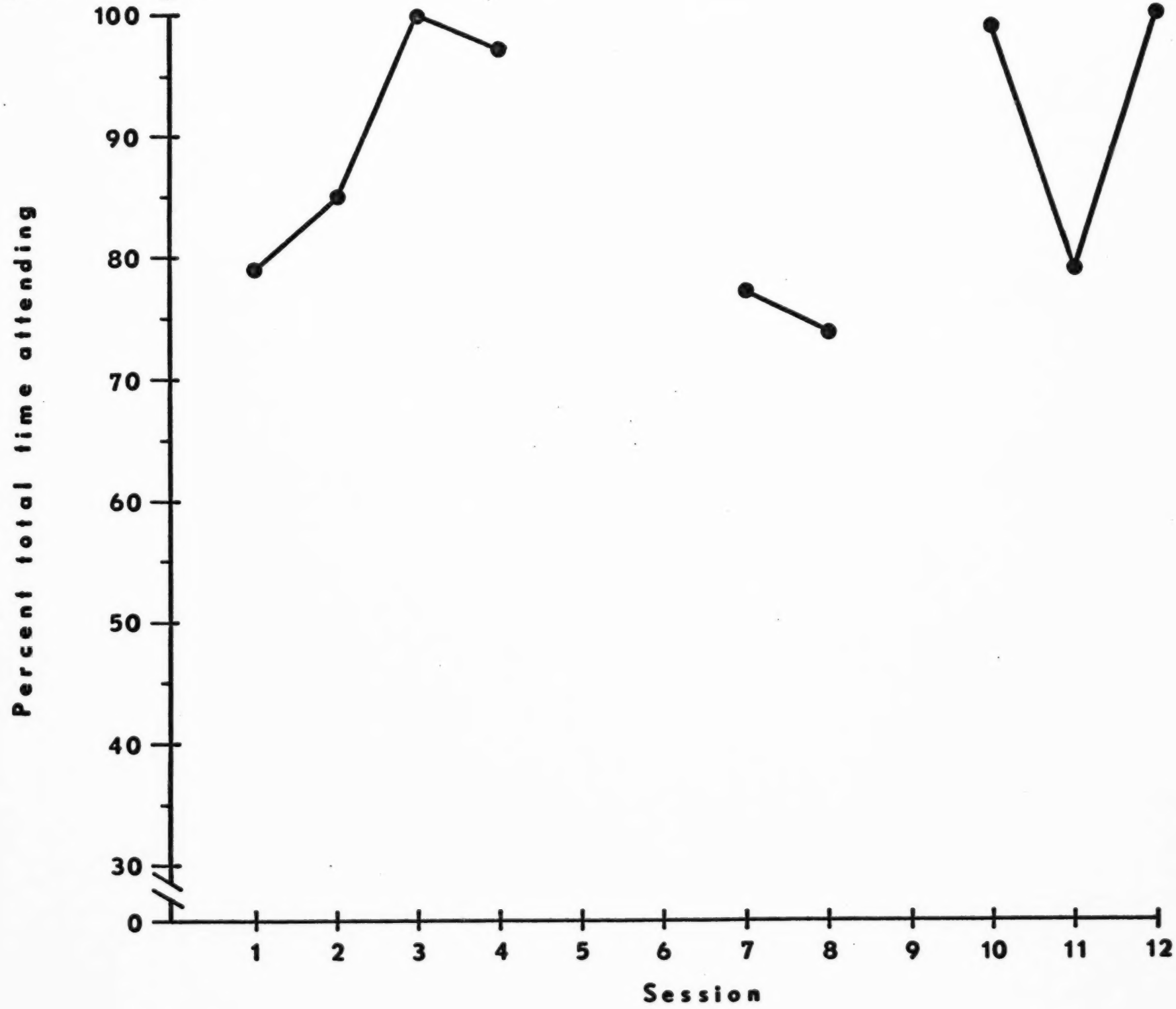


Percentage of each session during which child was attending to lesson:
4 year old negro boy



Percentage of each session during which child was attending to lesson:

4-year old girl



Percentage of each session during which child was attending to lesson:

5-year old boy